

Table 4a. Percentage distribution of science and engineering doctorates awarded, by major field and citizenship status of recipients: 1988-97

Field of study	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Total									
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	20.0	20.9	21.4	21.7	22.0	22.4	22.2	22.6	23.2	22.5
Aeronautical/astronautical .....	.7	.8	.8	.9	.9	.9	.9	.9	1.1	1.0
Chemical	3.3	3.3	2.9	2.9	2.9	2.9	2.8	2.7	2.9	2.8
Civil	2.5	2.5	2.4	2.4	2.4	2.5	2.6	2.5	2.6	2.4
Electrical	4.8	5.2	5.6	5.8	6.0	6.1	6.4	6.5	6.4	6.3
Industrial .....	.6	.7	.7	.7	.8	.9	.9	1.1	.9	.9
Materials/metallurgical	1.8	1.7	1.9	2.0	2.0	2.1	2.1	2.2	2.1	2.1
Mechanical	3.4	3.5	3.9	3.6	4.0	4.0	3.9	3.9	3.9	3.8
Other engineering	2.8	3.1	3.2	3.4	3.0	3.0	2.8	2.9	3.3	3.1
Sciences, total	80.0	79.1	78.6	78.3	78.0	77.6	77.8	77.4	76.8	77.5
Physical sciences, total	16.0	15.0	15.4	15.1	15.3	14.5	15.2	14.5	14.1	13.8
Astronomy .....	.6	.5	.6	.5	.5	.6	.5	.7	.7	.7
Chemistry	9.6	9.1	9.2	9.1	9.0	8.4	8.6	8.1	7.9	7.9
Physics	5.6	5.3	5.5	5.4	5.7	5.5	5.9	5.6	5.5	5.1
Other physical sciences .....	.2	.1	.1	.1	.1	.1	.1	.1	.0	.1
Earth, atmospheric, and ocean sciences	3.3	3.3	3.2	3.4	3.2	3.0	3.1	2.9	2.9	3.2
Mathematics	3.6	4.0	3.9	4.3	4.3	4.5	4.3	4.5	4.1	4.1
Computer sciences	2.5	2.8	3.1	3.3	3.5	3.5	3.4	3.8	3.4	3.3
Biological sciences	19.6	18.9	18.9	19.4	19.4	20.0	19.9	20.3	21.0	21.3
Agricultural sciences	4.8	5.0	5.1	4.5	4.3	3.8	4.1	3.9	3.8	3.6
Psychology	14.7	14.8	14.3	13.5	13.2	13.4	12.9	12.9	12.8	13.0
Social sciences	15.5	15.3	14.6	14.8	14.6	14.8	14.9	14.6	14.7	15.1
	Citizenship known									
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	19.9	20.9	21.1	21.7	21.9	22.2	22.2	22.6	23.1	22.8
Aeronautical/astronautical .....	.7	.8	.8	.9	.9	.9	.9	1.0	1.0	1.0
Chemical	3.3	3.4	2.9	2.9	3.0	2.9	2.8	2.7	3.0	2.9
Civil	2.6	2.5	2.4	2.4	2.4	2.5	2.6	2.5	2.6	2.5
Electrical	4.7	5.2	5.5	5.8	6.0	6.1	6.4	6.5	6.3	6.4
Industrial .....	.6	.8	.7	.7	.8	.9	.9	1.1	1.0	.9
Materials/metallurgical	1.8	1.7	1.9	2.0	2.0	2.1	2.1	2.2	2.1	2.2
Mechanical	3.4	3.4	3.8	3.6	4.0	4.0	3.9	3.8	3.9	3.8
Other engineering	2.8	3.0	3.1	3.3	2.9	2.9	2.7	2.8	3.2	3.0
Sciences, total	80.1	79.1	78.9	78.3	78.1	77.8	77.8	77.4	76.9	77.2
Physical sciences, total	16.1	15.1	15.6	15.1	15.4	14.6	15.2	14.5	14.0	14.0
Astronomy .....	.6	.5	.6	.5	.6	.6	.6	.7	.7	.8
Chemistry	9.7	9.2	9.2	9.1	9.0	8.4	8.6	8.1	7.8	8.0
Physics	5.6	5.3	5.6	5.4	5.7	5.5	5.9	5.6	5.4	5.2
Other physical sciences .....	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1
Earth, atmospheric, and ocean sciences	3.4	3.3	3.2	3.4	3.2	3.0	3.2	3.0	2.9	3.2
Mathematics	3.6	3.9	3.9	4.3	4.2	4.5	4.3	4.4	4.1	4.1
Computer sciences	2.6	2.9	3.1	3.4	3.6	3.5	3.4	3.8	3.4	3.3
Biological sciences	20.0	19.6	19.3	19.5	19.7	20.2	20.0	20.4	21.2	21.7
Agricultural sciences	4.9	5.0	5.1	4.5	4.3	3.9	4.2	4.0	3.9	3.6
Psychology	14.5	14.2	14.2	13.4	13.1	13.4	12.8	12.9	12.9	12.4
Social sciences	15.2	15.1	14.6	14.8	14.6	14.8	14.8	14.5	14.6	14.9

See explanatory information, if any, and SOURCE at end of table.

Table 4a. Percentage distribution of science and engineering doctorates awarded, by major field and citizenship status of recipients: 1988-97

Field of study	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
U.S. citizens										
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	13.3	13.8	13.8	14.3	14.5	14.9	14.6	15.4	16.6	17.1
Aeronautical/astronautical .....	.5	.5	.6	.7	.7	.8	.7	.9	1.1	1.0
Chemical	2.7	2.8	2.4	2.4	2.2	2.2	1.9	1.9	2.0	2.0
Civil	1.4	1.4	1.3	1.2	1.1	1.1	1.3	1.3	1.4	1.6
Electrical	3.0	3.3	3.5	3.8	4.1	4.2	4.2	4.4	4.5	4.7
Industrial .....	.3	.4	.4	.3	.4	.6	.6	.7	.7	.6
Materials/metallurgical	1.3	1.3	1.3	1.4	1.4	1.5	1.4	1.5	1.6	1.7
Mechanical	1.9	1.9	2.1	2.0	2.4	2.3	2.4	2.5	2.8	2.9
Other engineering	2.3	2.2	2.2	2.4	2.2	2.2	2.0	2.2	2.6	2.6
Sciences, total	86.7	86.2	86.2	85.7	85.5	85.1	85.4	84.6	83.4	82.9
Physical sciences, total	15.9	14.7	15.3	14.5	14.8	14.0	14.5	13.8	13.3	13.4
Astronomy .....	.7	.6	.6	.6	.7	.7	.7	.8	.9	1.0
Chemistry	10.3	9.6	9.9	9.2	9.1	8.5	8.5	8.0	7.5	7.8
Physics	4.7	4.4	4.7	4.6	4.9	4.7	5.2	4.9	4.9	4.6
Other physical sciences .....	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
Earth, atmospheric, and ocean sciences	3.7	3.8	3.6	4.0	3.5	3.1	3.3	3.1	3.0	3.3
Mathematics	2.6	2.9	2.6	3.2	3.1	3.3	3.3	3.6	3.1	3.3
Computer sciences	2.1	2.5	2.5	2.7	2.9	2.8	2.8	3.1	2.7	2.6
Biological sciences	23.4	23.2	22.5	22.7	22.9	23.1	22.6	22.6	22.7	23.0
Agricultural sciences	4.0	4.5	4.4	3.9	3.5	3.1	3.4	3.2	3.0	2.9
Psychology	20.0	19.9	20.6	20.2	19.9	20.6	20.1	19.9	20.0	18.3
Social sciences	15.1	14.6	14.6	14.7	14.9	15.1	15.3	15.4	15.6	16.0
Non-U.S. citizens										
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	34.4	35.4	34.3	33.8	33.3	33.4	33.1	33.1	32.5	32.5
Aeronautical/astronautical	1.0	1.4	1.2	1.1	1.3	1.1	1.1	1.0	1.0	1.2
Chemical	4.7	4.6	3.9	3.7	4.2	4.0	4.0	3.9	4.4	4.5
Civil	5.1	4.9	4.4	4.4	4.3	4.5	4.5	4.2	4.3	4.0
Electrical	8.6	9.2	9.1	9.2	8.9	8.9	9.5	9.5	9.0	9.2
Industrial	1.3	1.5	1.2	1.3	1.5	1.4	1.3	1.6	1.3	1.4
Materials/metallurgical	3.0	2.7	3.0	3.0	2.8	3.0	3.0	3.2	2.9	3.0
Mechanical	6.7	6.5	6.9	6.2	6.5	6.6	6.1	5.9	5.4	5.5
Other engineering	4.0	4.6	4.6	4.9	3.8	3.9	3.7	3.8	4.2	3.7
Sciences, total	65.6	64.6	65.7	66.2	66.7	66.6	66.9	66.9	67.5	67.5
Physical sciences, total	16.6	15.9	16.0	16.1	16.3	15.4	16.1	15.6	15.1	14.9
Astronomy .....	.4	.5	.4	.4	.4	.4	.4	.5	.5	.4
Chemistry	8.5	8.4	8.1	9.0	8.9	8.2	8.7	8.4	8.4	8.3
Physics	7.6	7.0	7.4	6.6	7.0	6.7	6.9	6.6	6.2	6.2
Other physical sciences .....	.1	.0	.1	.1	.1	.1	.1	.1	.0	.0
Earth, atmospheric, and ocean sciences	2.6	2.3	2.4	2.4	2.9	2.8	2.9	2.8	2.8	3.1
Mathematics	5.8	5.8	6.1	6.3	6.0	6.3	5.7	5.7	5.5	5.6
Computer sciences	3.6	3.6	4.2	4.5	4.6	4.4	4.4	4.7	4.3	4.4
Biological sciences	12.3	12.1	13.4	14.2	14.8	15.9	16.4	17.2	19.0	19.4
Agricultural sciences	6.9	6.1	6.4	5.5	5.6	5.1	5.2	5.1	5.0	4.7
Psychology	2.4	2.5	2.4	2.2	2.6	2.4	2.2	2.5	2.6	2.4
Social sciences	15.4	16.2	14.7	14.9	14.1	14.3	14.0	13.3	13.1	13.1

See explanatory information, if any, and SOURCE at end of table.

Table 4a. Percentage distribution of science and engineering doctorates awarded, by major field and citizenship status of recipients: 1988-97

Field of study	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Non-U.S. citizens with permanent visas										
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	32.4	32.5	32.5	30.2	29.7	28.6	27.7	27.2	26.3	26.2
Aeronautical/astronautical	1.2	.7	.7	.9	.6	.4	.7	.4	.6	.6
Chemical	4.4	5.5	4.2	4.0	4.3	3.2	2.9	2.6	2.5	3.8
Civil	4.1	5.2	5.1	3.1	3.7	3.6	2.9	2.9	3.1	3.4
Electrical	9.3	8.8	9.0	10.3	8.8	10.1	8.8	8.2	7.3	8.4
Industrial	1.0	.7	1.1	1.4	1.4	1.0	1.0	1.2	1.0	.8
Materials/metallurgical	2.4	1.9	2.2	2.3	2.5	2.4	2.6	3.2	3.1	1.9
Mechanical	6.3	5.9	5.8	4.8	5.4	5.3	5.9	5.1	5.1	3.6
Other engineering	3.7	3.7	4.5	3.5	3.0	2.7	2.9	3.6	3.8	3.7
Sciences, total	67.6	67.5	67.5	69.8	70.3	71.4	72.3	72.8	73.7	73.8
Physical sciences, total	12.3	13.1	14.4	14.0	14.5	14.4	19.6	20.1	16.4	16.0
Astronomy .....	.6	.4	.3	.2	.4	.3	.3	.6	.4	.3
Chemistry	6.5	7.6	8.3	8.6	8.2	7.8	10.8	11.0	9.7	9.0
Physics	4.9	5.1	5.4	5.3	5.9	6.2	8.4	8.4	6.2	6.7
Other physical sciences .....	.4	.1	.3	.0	.0	.1	.1	.1	.0	.0
Earth, atmospheric, and ocean sciences	2.4	2.6	1.6	2.0	2.5	2.5	3.5	3.3	3.2	3.1
Mathematics	3.9	3.1	3.9	4.3	3.8	5.7	5.1	6.2	5.3	4.4
Computer sciences	3.7	5.2	4.6	4.9	4.8	5.1	3.9	3.8	3.1	3.9
Biological sciences	17.0	16.2	15.8	16.4	17.4	18.5	22.0	23.8	27.2	25.5
Agricultural sciences	6.3	4.0	4.8	4.4	4.5	3.0	3.2	3.0	3.4	3.7
Psychology	5.4	4.8	6.1	5.1	6.2	5.5	2.8	2.9	3.5	4.0
Social sciences	16.6	18.6	16.4	18.8	16.6	16.7	12.2	9.7	11.7	13.3
Non-U.S. citizens with temporary visas										
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	34.9	36.0	34.7	34.5	33.9	34.3	35.3	36.1	34.8	34.5
Aeronautical/astronautical	1.0	1.6	1.3	1.2	1.4	1.2	1.3	1.3	1.2	1.4
Chemical	4.8	4.4	3.8	3.7	4.2	4.1	4.5	4.5	5.1	4.7
Civil	5.4	4.9	4.3	4.6	4.4	4.7	5.1	4.8	4.7	4.2
Electrical	8.5	9.2	9.2	9.0	9.0	8.7	9.8	10.2	9.6	9.5
Industrial	1.3	1.7	1.2	1.2	1.5	1.5	1.4	1.9	1.5	1.6
Materials/metallurgical	3.1	2.8	3.2	3.2	2.9	3.1	3.1	3.2	2.8	3.3
Mechanical	6.7	6.6	7.1	6.5	6.6	6.8	6.1	6.2	5.5	6.1
Other engineering	4.1	4.8	4.6	5.1	4.0	4.2	4.0	3.9	4.4	3.7
Sciences, total	65.1	64.0	65.3	65.5	66.1	65.7	64.7	63.9	65.2	65.5
Physical sciences, total	17.6	16.5	16.3	16.5	16.6	15.6	14.7	13.3	14.6	14.6
Astronomy .....	.4	.5	.5	.5	.3	.4	.4	.4	.5	.5
Chemistry	9.0	8.6	8.1	9.0	9.0	8.3	7.9	7.0	7.9	8.1
Physics	8.2	7.4	7.7	6.9	7.2	6.8	6.3	5.7	6.2	6.0
Other physical sciences .....	.1	.0	.1	.1	.1	.0	.1	.1	.0	.0
Earth, atmospheric, and ocean sciences	2.7	2.3	2.6	2.4	2.9	2.9	2.6	2.5	2.6	3.1
Mathematics	6.2	6.4	6.5	6.6	6.3	6.4	6.0	5.5	5.7	6.0
Computer sciences	3.6	3.3	4.1	4.4	4.5	4.3	4.6	5.2	4.8	4.5
Biological sciences	11.3	11.3	13.0	13.9	14.3	15.4	14.1	13.9	15.9	17.4
Agricultural sciences	7.0	6.6	6.7	5.7	5.8	5.5	6.0	6.1	5.7	5.0
Psychology	1.7	2.0	1.8	1.7	1.9	1.8	2.0	2.3	2.3	1.8
Social sciences	15.1	15.7	14.4	14.3	13.6	13.9	14.8	15.1	13.6	13.1

See explanatory information, if any, and SOURCE at end of table.

Table 4a. Percentage distribution of science and engineering doctorates awarded, by major field and citizenship status of recipients: 1988-97

Field of study	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	Citizenship unknown									
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering, total	21.4	21.4	29.0	22.9	27.3	28.7	23.3	26.1	25.7	19.8
Aeronautical/astronautical	1.4	.7	1.7	.4	3.0	1.2	.8	.9	1.2	.6
Chemical	2.7	1.8	1.7	2.4	1.2	3.2	1.8	1.7	.9	1.8
Civil	2.1	1.7	3.0	1.9	3.4	2.2	1.4	1.8	2.9	2.0
Electrical	5.9	5.7	8.0	6.2	6.1	5.9	7.8	8.8	8.1	5.7
Industrial .....	.7	.7	.3	.6	.6	.8	.0	.7	.7	.8
Materials/metallurgical	1.5	1.9	1.7	1.7	2.5	2.5	1.8	2.4	2.0	1.5
Mechanical	3.7	4.4	5.5	4.9	3.6	5.5	3.6	4.6	4.2	2.8
Other engineering	3.4	4.5	7.1	4.7	6.9	7.3	6.0	5.1	5.6	4.5
Sciences, total	78.6	78.6	71.0	77.1	72.7	71.3	76.7	73.9	74.2	80.2
Physical sciences, total	14.8	13.7	11.8	14.7	12.2	14.0	16.3	12.8	16.4	11.8
Astronomy .....	.4	.3	.2	.4	.0	.0	.0	.7	.1	.3
Chemistry	8.1	7.2	7.8	9.4	6.9	8.2	8.9	8.3	9.2	6.8
Physics	5.9	6.1	3.5	4.7	5.0	5.7	6.6	3.9	7.0	4.5
Other physical sciences .....	.4	.2	.2	.2	.3	.1	.8	.0	.0	.2
Earth, atmospheric, and ocean sciences	2.9	3.1	3.4	2.6	2.7	4.2	2.8	2.4	3.9	3.3
Mathematics	3.9	4.9	4.9	3.2	6.2	5.2	2.6	6.8	4.4	4.2
Computer sciences .....	.9	2.2	3.3	1.9	2.3	3.0	3.4	2.9	4.0	3.6
Biological sciences	15.5	11.9	10.2	14.1	11.2	12.4	11.5	14.3	14.7	15.9
Agricultural sciences	4.0	4.6	5.0	3.8	2.8	2.0	1.8	1.7	2.4	3.9
Psychology	17.4	20.9	18.4	21.2	18.9	14.7	18.5	14.9	10.5	20.4
Social sciences	19.3	17.4	13.8	15.6	16.4	15.9	19.7	18.2	18.0	17.1

SOURCE: National Science Foundation/Science Resource Studies, Survey of Earned Doctorates